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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,781	07/11/2006	Daiki Kudo	1163-0572PUS1	1387

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
PATEL, NIRAV G	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
12/03/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/585,781	KUDO ET AL.	
	Examiner	Art Unit	
	Nirav G. Patel	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *4-16, 18-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/11/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

It would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items:

1. Application number (checked for accuracy, including series code and serial no.).
2. Group art unit number (copied from most recent Office communication).
3. Filing date.
4. Name of the examiner who prepared the most recent Office action.
5. Title of invention.
6. Confirmation number (See MPEP § 503).

Election/Restrictions

1. Applicant's election with traverse of claim 17 in the reply filed on 9/30/2009 is acknowledged. The traversal is on the ground(s) that all the claims share a common feature and therefore not subject to a restriction requirement. This is not found persuasive because under PCT restriction requirements, if the claims lack a special technical feature, they lack unity and therefore are subject to a restriction requirement (emphasis added).

The applicants state that the claims share an inventive concept, such as a variable-length encoder and decoder. While that is a technical feature which is common to the claims, it is not considered to be a special technical feature, whereas the reference values generated are considered, by the examiner, as a special technical feature. However, due to the fact that each of the claims refers to a different special technical features (Using the components in Figures 1 or 2 with the edges of the object to be encoded (Figures 3 or 6/8), they are lacking unity.

The applicants also stated that it is not clear from the original election of species requirement how many distinct species are present. There are a total of 8 independent claims (Claims 1, 4, 10, 12, 17, 18, 19, and 20). Claims 1, 4, 10, and 12 are directed to encoding, and have corresponding decoding claims, 17-20 (not respectively).

Claim 1, considered by the examiner as species 1, is related to encoding of the left edge blocks using the components in Figure 1. The corresponding decoding claim is claim 17.

Claim 4, considered by the examiner as species 2, is related to encoding of the left edge blocks using the components in Figure 2. The corresponding decoding claim is claim 19.

Claim 10, considered by the examiner as species 3, is related to encoding of the left edge of the regions (illustrated in Figures 6 & 8) using the components in Figure 1. The corresponding decoding claim is claim 18.

Claim 12, considered by the examiner as species 4, is related to encoding of the left edge of the regions (illustrated in Figures 6 & 8) using the components in Figure 2. The corresponding decoding claim is claim 20.

Since the applicants elected Claim 17, which corresponds to species 1, independent claims 1 and 17 along with all of their dependent claims will be examined.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

1. The information disclosure statement filed 7/11/2006 complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been placed in the application file, and the non-crossed out information referred to therein has been considered as to the merits.

2. Regarding Documents "BH" and "CA," Document "BH" has not been provided, or any document with that number. Document "CA" is not in English and cannot be understood by the examiner, therefore not considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art ("AAPA") in view of Maeda et al. (U.S. Pat. No.: 6,075,910, "Maeda").

1) Regarding Claim 1, AAPA teaches an image encoding apparatus comprising: a converter for receiving an image signal, and for carrying out orthogonal transformation on a block by block basis of an image frame to convert the image signal of individual blocks to DC components and AC components (Page 1, Lines 14-20: A conventional image

encoding apparatus converts an image signal to a DC component and AC component by transforming the image by dividing the image into blocks and applying two-dimensional orthogonal transformation such as DCT to each block); and

a differential unit for obtaining difference values between the DC components output from said converter and the predicted reference value generated by said predicted reference value generator (Page 1, Lines 21-27: The conventional image encoding apparatus then obtains difference values between DC components (from first step) and the predicted values (second step, as taught by Maeda).

AAPA fails to teach a predicted reference value generator for receiving the image signal, and for generating a predicted reference value of each image frame from individual DC components obtained by orthogonal transformation of left-edge blocks of the image frame, and said image encoding apparatus carries out quantizing and variable-length encoding of the AC components and the difference values obtained by said differential unit, carries out quantizing and variable-length encoding of the predicted reference value to be added to a header, and outputs as a bit stream.

However, in the same field of endeavor, Maeda teaches a predicted reference value generator for receiving the image signal, and for generating a predicted reference value of each image frame from individual DC components obtained by orthogonal transformation of left-edge blocks of the image frame (Figure 4C: When the power concentrates are large in the horizontal edge, the blocks are independently vector-quantized (Cols. 9-10, Lines 58-67 &1-9), which is obtained by orthogonal transformations of the horizontal edge (left-edge blocks) (Col. 9, Lines 45-57), which generates a reference value as a result of the steps); and

said image encoding apparatus carries out quantizing and variable-length encoding of the AC components (Claim 1: The apparatus codes every block of a predetermined size (every block, thus AC components)) and the difference values obtained by said differential unit, carries out quantizing and variable-length encoding of the predicted reference value to be added to a header (Cols. 9-10, Lines 58-67 & 1-9: The reference values are subjected to quantization, which is a multistage vector quantization, where the code length can be changed (variable-length)), and outputs as a bit stream (Figure 1: Data from the code data memory (17) sends the data to the transmitting unit (18) which allows to output the data as a bit stream. To transmit data in a file, the file has to have a header so that when it is received, it can be decoded)).

Applying Maeda's teachings to the teachings of AAPA of generating a predicted reference value from the DC components obtained by orthogonal transformation of left-edge blocks allows for raising the efficiency of vector quantization yielding in efficient encoding.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Maeda to AAPA.

2) Regarding Claim 2, Maeda teaches in combination with AAPA the limitations of claim 1, and further teaches said predicted reference value generator generates the predicted reference value of each image frame by obtaining an average value, mode or median of the DC components of the left-edge blocks of the image frame (Col. 2, Lines 31-37: mean values in each sub-block (left-edge, as illustrated in Figure 4C) are obtained).

3) Regarding Claim 17, the recited limitations are for a decoder, which decodes the encoded image as shown in claim 1. As it is well known in the art to a person of ordinary skill at the time of the invention, decoding is the reverse steps of encoding, and

since Maeda and AAPA teach encoding, performing the combination of steps, as analyzed above, in reverse would accomplish the decoding steps as recited.

Particularly, Maeda teaches quantizing and variable length encoding of AC components (illustrated in the analysis of claim 1). Performing these steps in reverse would decode the variable-length encoded data (difference values and AC components) in the received data stream (Figure 1, "Reception") and decode reference values of each frame (which is taught by Maeda).

Maeda's teachings in conjunction with AAPA's teachings of a differential unit which subtracts the value from Maeda's reference value generator and a DC component in reverse order, would allow for adding the difference values and the predicted reference value, which are decoded by a variable-length decoder, which is obvious from Maeda's teachings.

Furthermore, when AAPA teaches carrying out a wavelet transform, as identified in the analysis of claim 1, performing the reverse (well known inverse wavelet transform) would output a decoded image signal by carrying out dequantization and inverse orthogonal transformation of the AC components and the DC components obtained by said adder.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the steps of Maeda and AAPA in reverse order to perform decoding.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Maeda and in further view of Pesquet-Popescu et al. (U.S. Pat. No.: 6,519,284, "Pesquet-Popescu").

1) Regarding Claim 3, while the combination of AAPA and Maeda teaches the limitations of claim 1, they fail to teach the limitations of claim 3.

However, in the same field of endeavor, Pesquet-Popescu teaches said predicted reference value generator generates the predicted reference value of each of regions of a present image frame from the individual DC components resulting from orthogonal transformation of left-edge blocks of the regions of a past image frame or future image frame (Claim 1: Encoding of the lowest frequency information (DC components) involves using values (predicted reference value) at the same location in past frames and neighbouring locations in the current frame).

Using the values obtained from a past frame as the values in the current frame allows for higher compression due to the fact that the same data in both frames requires only half of the data, as taught by Pesquet-Popescu, than compared to saving both sets of predicted reference value data in each frame as taught by Maeda, thus achieving better results.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Pesquet-Popescu to Maeda and AAPA.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirav G. Patel whose telephone number is (571)270-5812. The examiner can normally be reached on Monday - Friday 8 am - 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nirav G. Patel/
Examiner, Art Unit 2624

/CHARLES KIM/
Primary Examiner, Art Unit 2624